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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,002	08/17/2004	Shih-Chang Shei	12278-US-PA	5001

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JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER	
RAABE, CHRISTOPHER M	
ART UNIT	PAPER NUMBER
2879	

NOTIFICATION DATE	DELIVERY MODE
04/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USA@JCIPGROUP.COM.TW

Office Action Summary	Application No.	Applicant(s)	
	10/711,002	SHEI ET AL.	
	Examiner	Art Unit	
	CHRISTOPHER M. RAABE	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11,13-17 and 19-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-17 and 19-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 9, 2008 has been entered.

Applicant's arguments filed January 9, 2008 have been fully considered but they are not persuasive.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,3-11,13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Maeda et al. (USPN 20040245532).

With regard to claim 1,

Maeda et al. disclose in at least paragraph 11 and figure 2 a white light LED comprising: an exciting light source (1) for emitting light having a wavelength in a range of about 250nm to

about 350nm; and fluorescent powders (6) disposed around the exciting light source (1) comprising and at least three different fluorescent materials selected from a group consisting of yellow-light fluorescent materials, red-light fluorescent materials, green-light fluorescent materials, and blue-light fluorescent materials.

With regard to claim 3,

Maeda et al. disclose additionally in at least paragraph 76 and paragraphs 81-92, the material of the fluorescent powder includes yellow fluorescent materials selected from a group consisting of $(Tb_{3-x-y}Ce_xRe_y)Al_5O_{12}$, $(Me_{1-x-y}Eu_xRe_y)_3SiO_5$, $YBO_3:Ce^{3+}$, $Y_2O_3:Eu^{3+}$ green fluorescent materials selected from a group consisting of $YBO_3:Tb^{3+}$, $SrGa_2O_4:Eu^{2+}$, $SrAl_2O_4:Eu^{2+}$, $(Ba,Sr)MgAl_{10}O_{17}:Mn^{2+}$, red fluorescent materials selected from a group consisting of $Y_2O_3:Eu^{3+}$, $Y_2O_3:Bi^{3+}$, $(Y,Gd)_2O_3:Bi^{3+}$, $Y_2O_2S:Eu^{3+}$, $Y_2O_2S:Bi^{3+}$, $(Me_{1-x}Eu_x)ReS$, $6MgO,As_2O_5:Mn$, $Mg_3SiO_4:Mn$, and blue fluorescent materials selected from a group consisting of $BaMgAl_{10}O_{17}:Eu^{2+}$, $(Ca,Sr,Ba)_5(PO_4)_3Cl:Eu^{2+},Gd^{2+}$.

With regard to claim 4,

Maeda et al. disclose the white light LED of claim 3, wherein $0<x\leq0.8$ and $0\leq y\leq2.0$.

With regard to claim 5,

Maeda et al. disclose the white light LED of claim 3, wherein Me comprises calcium strontium or barium.

With regard to claim 6,

Maeda et al. disclose the white light LED of claim 3, wherein Re comprises praseodymium, rubidium, samarium, dysprosium, holmium, yttrium, erbium, europium, thulium, ytterbium, chromium, strontium, lutetium, gadolinium, aluminum or zinc.

With regard to claim 7,

Maeda et al. disclose the white light LED of claim 1, wherein the exciting light source comprises LED chip or laser diode chip.

With regard to claim 8,

Maeda et al. disclose in at least paragraph 11 and figure 1, a white light LED comprising: a susceptor (11) having a pit (not labeled) in a surface of the susceptor (11); an exciting light source (1) disposed in the pit of the susceptor (11), and electrically connected (via wires) to the susceptor (11), wherein a light having a wavelength from about 250nm to about 350 nm is emitted from the exciting light source (1), a sealing resin (2), disposed over the susceptor (11), wherein the light source (1) is covered by the sealing resin (1) to mount the exciting light source (1) over the susceptor (11), and fluorescent powders (3,4,5,6) disposed around the exciting light source (1) comprising at least three different fluorescent materials selected from a group consisting of yellow fluorescent materials, red fluorescent materials, green fluorescent materials, and blue fluorescent materials.

With regard to claim 9,

Maeda et al. disclose The white light LED of claim 8, further comprising: a plurality of welding wire (not labeled), electrically connected between the exciting light source (1) and the susceptor (11).

With regard to claim 10,

Maeda et al. disclose the white light LED of claim 8, wherein the susceptor (1) comprises a packaging leadframe or a circuit board.

With regard to claim 11,

Maeda et al. disclose the white light LED of claim 8, wherein the exciting light source comprises LED chip or laser diode chip.

With regard to claim 13,

Maeda et al. disclose wherein, the material of the fluorescent powder includes yellow fluorescent materials selected from a group consisting of $(Tb_{3-x-y}Ce_xRe_y)Al_5O_{12}$, $(Me_{1-x-y}Eu_xRe_y)_3SiO_5$, $YBO_3:Ce^{3+}$, $Y_2O_3:Eu^{3+}$ green fluorescent materials selected from a group consisting of $YBO_3:Tb^{3+}$, $SrGa_2O_4:Eu^{2+}$, $SrAl_2O_4:Eu^{2+}$, $(Ba,Sr)MgAl_{10}O_{17}:Mn^{2+}$, red fluorescent materials selected from a group consisting of $Y_2O_3:Eu^{3+}$, $Y_2O_3:Bi^{3+}$, $(Y,Gd)_2O_3:Bi^{3+}$, $Y_2O_2S:Eu^{3+}$, $Y_2O_2S:Bi^{3+}$, $(Me_{1-x}Eu_x)ReS$, $6MgO,As_2O_5:Mn$, $Mg_3SiO_4:Mn$, and blue fluorescent materials selected from a group consisting of $BaMgAl_{10}O_{17}:Eu^{2+}$, $(Ca,Sr,Ba)_5(PO_4)_3Cl:Eu^{2+},Gd^{2+}$.

With regard to claim 14,

Maeda et al. disclose the white light LED of claim 13, wherein $0<x\leq0.8$ and $0\leq y\leq2.0$.

With regard to claim 15,

Maeda et al. disclose the white light LED of claim 13, wherein Me comprises calcium strontium or barium.

With regard to claim 16,

Maeda et al. disclose the white light LED of claim 13, wherein Re comprises praseodymium, rubidium, samarium, dysprosium, holmium, yttrium, erbium, europium, thulium, ytterbium, chromium, strontium, lutetium, gadolinium, aluminum or zinc.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 17,19-25,28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (as above), in view of Sakano et al. (USPN 2003/0080341).

With regard to claim 17,

Maeda et al. disclose in at least figure 3 and paragraph 11, a white LED, at least comprising a LED chip (1) for emitting a light having a wavelength in a range of 250nm-350 nm, and fluorescent powders (3,4,5,6), disposed around the exciting light source (1), comprising at least three different fluorescent materials selected from a group consisting of yellow, red , green, and blue fluorescent materials.

Maeda et al. do not disclose the specific structure of the LED chip. However, an LED chip of the type disclosed by Sakano et al. in paragraphs 91-96 having a substrate, nucleation layer disposed over the substrate, a conductive buffer layer disposed over the nucleation layer, a first confinement layer disposed over the buffer layer, wherein a type of a doping material of the first confinement layer and that of the buffer layer are the same; a light emitting layer comprising doped III-IV compound semiconductor material disposed over the first confinement layer; a second confinement layer disposed over the light emitting layer having a doping material different than that of the first confinement layer; a contact layer disposed over the second confinement layer and having a superlattice structure material layer, an anode electrode disposed over the contact layer, a cathode electrode connected to the buffer layer and isolated from the first and second confinement layers, the light emitting layer, the contact layer and the anode electrode, was well known to those of ordinary skill in the art at the time of the invention to provide an effective excitation source for the phosphors and would thus have been obvious to incorporate into the LED of Maeda et al.

With regard to claim 19,

Maeda et al. disclose additionally in paragraphs 81-92 the white LED of claim 17, wherein, the material of the fluorescent powder includes yellow fluorescent materials selected from a group consisting of $(Tb_{3-x-y}Ce_xRe_y)Al_5O_{12}$, $(Me_{1-x-y}Eu_xRe_y)_3SiO_5$, $YBO_3:Ce^{3+}$, $Y_2O_3:Eu^{3+}$

green fluorescent materials selected from a group consisting of $YBO_3:Tb^{3+}$, $SrGa_2O_4:Eu^{2+}$, $SrAl_2O_4:Eu^{2+}$, $(Ba,Sr)MgAl_{10}O_{17}:Mn^{2+}$, red fluorescent materials selected from a group consisting of $Y_2O_3:Eu^{3+}$, $Y_2O_3:Bi^{3+}$, $(Y,Gd)_2O_3:Bi^{3+}$, $Y_2O_2S:Eu^{3+}$, $Y_2O_2S:Bi^{3+}$, $(Me_{1-x}Eu_x)ReS$, $6MgO,As_2O_5:Mn$, $Mg_3SiO_4:Mn$, and blue fluorescent materials selected from a group consisting of $BaMgAl_{10}O_{17}:Eu^{2+}$, $(Ca,Sr,Ba)_5(PO_4)_3Cl:Eu^{2+},Gd^{2+}$.

With regard to claim 20,

Maeda et al. disclose the white light LED of claim 19, wherein $0<x\leq0.8$ and $0\leq y\leq2.0$.

With regard to claim 21,

Maeda et al. disclose the white light LED of claim 19, wherein Me comprises calcium strontium or barium.

With regard to claim 22,

Maeda et al. disclose the white light LED of claim 19, wherein Re comprises praseodymium, rubidium, samarium, dysprosium, holmium, yttrium, erbium, europium, thulium, ytterbium, chromium, strontium, lutetium, gadolinium, aluminum or zinc.

With regard to claim 23,

Sakano et al. disclose in paragraph 92 a super high conductivity material of the contact layer comprises strained layer superlattice (SLS) material. The obviousness of incorporating the LED chip of Sakano et al. into the LED of Maeda et al. was addressed in the rejection of claim 17.

With regard to claim 24,

Sakano et al. disclose in paragraphs 91-96 a conductive type of the contact layer and a conductive type of the second confinement layer are different. The obviousness of incorporating the LED chip of Sakano et al. into the LED of Maeda et al. was addressed in the rejection of claim 17.

With regard to claim 25,

Sakano et al. disclose in paragraphs 91-96, a conductive type of the contact layer and a conductive type of the anode electrode are different. The obviousness of incorporating the LED chip of Sakano et al. into the LED of Maeda et al. was addressed in the rejection of claim 17.

With regard to claim 28,

Sakano et al. disclose in paragraph 92 the substrate is comprised aluminum oxide, sapphire, silcon carbide (SiC), zinc oxide (ZnO), silicon substrate, gallium phosphide (GaP) or gallium arsenide (GaAs). The obviousness of incorporating the LED chip of Sakano et al. into the LED of Maeda et al. was addressed in the rejection of claim 17.

With regard to claim 29,

Sakano et al. disclose in paragraph 277 the light emitting layer comprises a doped III-V compound semiconductor quantum well structure. The obviousness of incorporating the LED chip of Sakano et al. into the LED of Maeda et al. was addressed in the rejection of claim 17.

With regard to claim 30,

Sakano et al. disclose in paragraph 253 the quantum well structure comprises doped III-V compound semiconductor comprising $Al_aIn_bGa_{1-a-b}N/Al_xIn_yGa_{1-x-y}N$, wherein $a,b \geq 0$; $0 \leq a+b<1$; $x,y \geq 0$; $0 \leq x+y<1$; $x>c>a$. The obviousness of incorporating the LED chip of Sakano et al. into the LED of Maeda et al. was addressed in the rejection of claim 17.

8. Claims 26,27,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakano et al. and Maeda et al. as applied to claim 17 above, and further in view of Kuo et al. (USPN 2002/0096687).

With regard to claim 26,

Sakano discloses the LED chip of claim 17.

Sakano does not describe the anode in detail.

Kuo et al. do disclose an anode electrode comprising a conventional metal used in a semiconductor process and a multi-layer structure composed of a mixture of the conventional metal, wherein a total thickness of the anode electrode is equal to or less than 0.1 μm (paragraph 33), providing greater light emission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the anode of Kuo et al. into the device of Sakano in order to provide greater light emission. The obviousness of incorporating the LED chip of Sakano into the white LED of Maeda et al. was addressed in the rejection of claim 17.

With regard to claim 27,

Sakano et al. disclose the LED chip.

Sakano does not describe the anode in detail.

Kuo et al do disclose in paragraph 33 the anode electrode comprising a transparent conductive oxide (TCO), wherein the TCO comprises a N-type conductive material comprising indium tin oxide (ITO), cadmium tin oxide (CTO), ZnO:Al, ZnO:In, ZnO:Ga, $ZnGa_2O_4$, SnO_2:Sb, Ga_2O_3:Sn, $AgInO_2$:Sn and In_2O_3:Zn, or a P-type conductive material comprising $CuAlO_2$, LaCuOS, NiO, $CuGaO_2$ and $SrCu_2O_2$, providing greater light emission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the anode of Kuo et al. into the device of Sakano in order to provide greater light emission. The obviousness of incorporating the LED chip of Sakano into the white LED of Maeda et al. was addressed in the rejection of claim 17.

With regard to claim 31,

Sakano et al. disclose the LED chip of claim 17.

Sakano et al. do not describe the cathode in detail.

Kuo et al. do disclose in paragraph 28 an LED wherein the cathode electrode comprises Cr/Au, Cr/Pt/Au, Cr/WSiN/Au, WSi_x/Au, Ti/Si_x/Au, Ti/Au, Ti/WSi_x/Au, Ti/Al/Cr/Au, Ti/Al/Co/Au, Cr/Al/Cr/Au, Cr/Al/Pt/Au, Cr/Al/Pd/Au, Cr/Al/Ti/Au, Cr/Al/Co/Au, Cr/Al/Ni/Au, Pd/Al/Ti/Au, Pd/Al/Pt/Au, Pd/Al/Ni/Au, Pd/Al/Pd/Au, Pd/Al/Cr/Au, Pd/Al/Co/Au, Nd/Al/Pt/Au, Nd/Al/Ti/Au, Nd/Al/Ni/Au, Nd/Al/Cr/Au Nd/Al/Co/A, Hf/Al/Ti/Au, Hf/Al/Pt/Au, Hf/Al/Ni/Au, Hf/Al/Pd/Au, Hf/Al/Cr/Au, Hf/Al/Co/Au, Zr/Al/Ti/Au, Zr/Al/Pt/Au, Zr/Al/Ni/Au, Zr/Al/Pd/Au, Zr/Al/Cr/Au, Zr/Al/Co/Au, TiNx/Ti/Au, TiNx/Pt/Au, TiNx/Ni/Au, TiNx/Pd/Au, TiNx/Cr/Au, TiNx/Co/Au TiWNx/Ti/Au, TiWNx/Pt/Au, TiWNx/Ni/Au, TiWNx/Pd/Au, Ti-WNx/Cr/Au, TiWNx/Co/Au, NiAl/Pt/Au, NiAl/Cr/Au, NiAl/Ni/Au, NiAl/Ti/Au, Ti/NiAl/Pt/Au, Ti/NiAl/Ti/Au, Ti/NiAl/Ni/Au or Ti/NiAl/Cr/Au, providing smaller contact resistance.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the cathode of Kuo et al. into the device of Sakano et al. in order to provide smaller contact resistance. The obviousness of incorporating the LED chip of Sakano into the white LED of Maeda et al. was addressed in the rejection of claim 17.

Response to Arguments

While the applicant argues that Maeda does not teach an light source emitting light having a wavelength of about 250nm to 350nm, the applicant asserts that this feature is taught by Maeda, directing the applicant's attention to paragraph 11 where such a light source is disclosed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER M. RAABE whose telephone number is (571)272-8434. The examiner can normally be reached on m-f 7am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CR/